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(54) Annular filter insert

(57) An annular filter insert for the separation of oil from air which flows radially outwards has glass fibres packed between an inner perforated support jacket 3 and an outer perforated support jacket 4 and end covers adhesively secured thereto, and to support the fibres without damage said outer support jacket has overlapping ends 9 connected by fusion adhesive and is compressed radially by an outer tube or stocking 7 of heat-shrinkable plastics. The adhesive is melted and set and the tube/stocking shrunk in one heating step, the end covers being applied at the same time.

Fig. 2

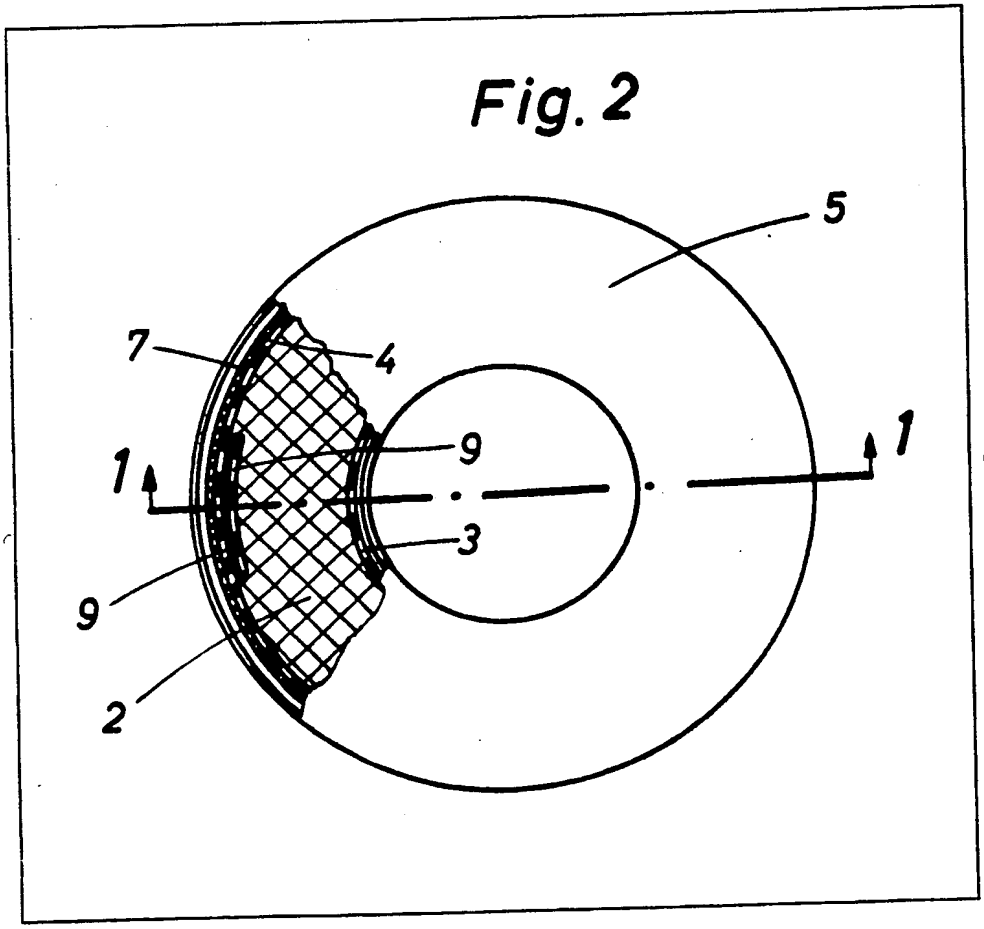

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Fig.1

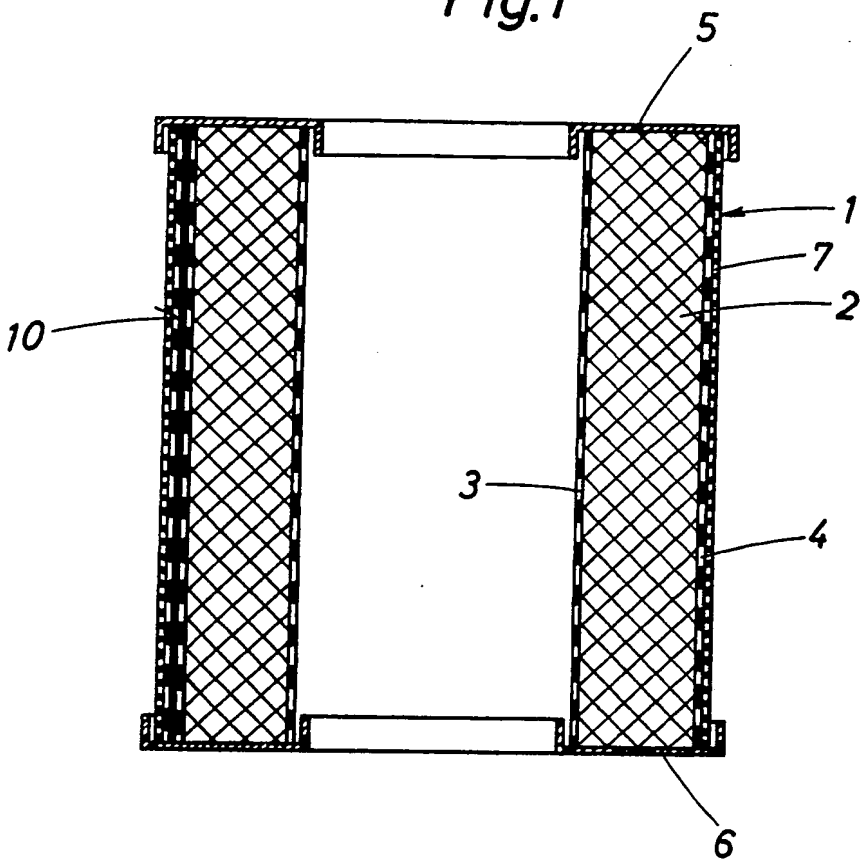
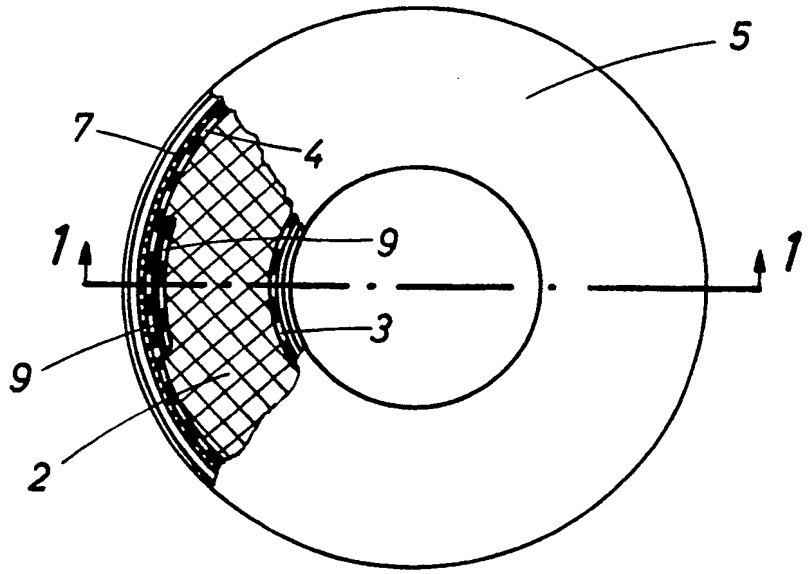


Fig. 2



SPECIFICATION

An annular, outwardly traversable filter insert for separating oil from air

The present invention relates to an annular filter insert for the separation of oil from air which is traversable radially outwards and has glass fibre layers interposed between an inner perforated support jacket and an outer perforated support jacket and covers adhesively secured at the end faces.

To avoid damage to mechanically sensitive glass fibre layers an outer support is required which is free from play and to attain this, there is proposed in German Patent Specification 11 34 785 the production of a glass fibre tube having an initially larger, external diameter which is reduced by subsequent insertion in a narrower, perforated sheet metal cylinder by means of a tapered nozzle, acting as a tool. The insertion pressure required, however, may cause damage to the glass fibre layers.

An object of the present invention is to provide an improved filter insert with regard to its structure so that an unbiased outward support is ensured without damage to the sensitive glass fibre layers.

According to the present invention there is provided an annular, outwardly traversable filter insert for separating oil from air comprising glass fibre layers located between an inner perforated supporting jacket and an outer perforated supporting jacket, and covers cemented or adhesively secured to the end faces; said outer supporting jacket having a closely fitting covering on the outer circumference made of a plastics material fabric tube or stocking shrinkable with heat action and said outer supporting jacket being formed as a ring or cylinder by being connected at its overlapping ends by an interposed sheet of a fusion adhesive.

The structure of the filter insert according to the present invention ensures an accurate, unbiased outward support of the glass fibre layers and permits the making of the filter insert without difficulty whilst ensuring maximum care of the glass fibre layers.

The invention will be described further, by way of example, with reference to the accompanying drawing, in which:–

Figure 1 is an axial section of a filter insert taken on the line 1–1 of Fig. 2; and

Figure 2 is a plan view partly in section of the filter insert of Fig. 1.

A filter insert 1 has layers of glass fibre 2 rolled up into a hollow cylinder and located between an inner perforated support jacket 3 and an outer perforated support jacket 4. An annular upper cover 5 and an annular lower cover 6 are cemented at the upper and lower end faces respectively.

A closely fitting covering 7 formed of a plastics material fabric tube or stocking shrunk on heat action is located on the external circumference of the outer perforated support jacket 4. In the embodiment the covering is a polyester fabric stocking.

The edges or ends 9 of the material of the outer perforated support jacket 4 are connected to form a cylinder or ring via an interposed layer or sheet 10 of a fusion adhesive. By the term "fusion adhesive" such adhesives are generally understood which are relatively solid in a cold state and at first have no adhesive properties. Only with heat action do such adhesives become soft and bond intimately with surfaces pressed into position and which are to be adhesively connected. The adhesive bond remains on setting of the adhesive.

Assembly of the filter insert is carried out by the glass fibre layers 2 being first wound onto the inner perforated support jacket 3. The outer support jacket 4 with its ends 9 still in the uncemented state and slightly spread are slid over the glass fibre layers 2. The adhesive sheet 10 is subsequently inserted between the overlapping ends 9 of the outer support jacket 4 and the stocking 7 of polyester fabric and cut according to length is slipped over the whole. Heat is now applied and the sheet 10 of the fusion adhesive softens. At the same time, due to the shrinking polyester stocking, a radial pressure is created acting all around against the outer perforated support jacket 4 which fits snugly against the glass fibre layers 2 over its whole circumference.

The upper annular cover 5 and the lower annular cover 6 are cemented to the end faces also via fusion adhesive sheets. The adhesive operation occurs simultaneously with the shrinking of the polyester stocking and the cementing or adhesive connection of the overlapping ends 9 of the outer support jacket 4.

CLAIMS

1. An annular, outwardly traversable filter insert for separating oil from air comprising glass fibre layers located between an inner perforated supporting jacket and an outer perforated supporting jacket, and covers cemented or adhesively secured to the end faces; said outer supporting jacket having a closely fitting covering on the outer circumference made of a plastics material fabric tube or stocking shrinkable with heat action and said outer supporting jacket being formed as a ring or cylinder by being connected at its overlapping ends by an interposed sheet of a fusion adhesive.

2. An annular filter insert substantially as herein described with reference to and as illustrated in the accompanying drawings.

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